

What is calimed is:

1 1. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin  
4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film having a water absorption of 1.5% by volume or  
8 less.

1 2. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin  
4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film having a saturation moisture absorption of 1.0%  
8 by volume or less.

1 3. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin  
4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film having a residual volatile component in an

005040" 2424560

8 amount not more than 3.0% by weight.

1 4. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin  
4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film having a modulus of elasticity of 10 MPa or less  
8 at a temperature of 250 °C.

1 5. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin  
4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film having, at the stage where the semiconductor  
8 chip has been bonded to the support member, a void volume of 10%  
9 or less in terms of voids present in the die-bonding material and  
10 at the interface between the die-bonding material and the support  
11 member.

1 6. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin

00543247.040500

4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film having a peel strength of 0.5 Kgf/5 × 5 mm chip  
8 or above at the stage where the semiconductor chip has been  
9 bonded to the support member.

1 7. A semiconductor device comprising a support member, a  
2 semiconductor chip, a die-bonding material for attaching the  
3 semiconductor chip to the support member, and a resin  
4 encapsulant member for encapsulating the semiconductor chip,  
5 wherein:

6 said die-bonding material is a film containing an organic  
7 matter; said film i) having a planar dimension not larger than the  
8 planar dimension of the semiconductor chip, and ii) not protruding  
9 outward from the region of the semiconductor chip at the stage  
10 where the semiconductor chip has been bonded to the support  
11 member.

1 8. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member, and encapsulating the semiconductor chip with a  
4 resin:

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter; said filmy die-bonding  
7 material having a water absorption of 1.5% by volume or less.

1 9. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member, and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter; said filmy die-bonding  
7 material having a saturation moisture absorption of 1.0% by  
8 volume or less.

1 10. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member, and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter; said filmy die-bonding  
7 material having a residual volatile component in an amount not  
8 more than 3.0% by weight.

1 11. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member, and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter; said filmy die-bonding  
7 material having a modulus of elasticity of 10 MPa or less at a

005040 24224560

8 temperature of 250 °C.

1 12. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter; said filmy die-bonding  
7 material having, at the stage where the semiconductor chip has  
8 been bonded to the support member, a void volume of 10% or less  
9 in terms of voids present in the die-bonding material and at the  
10 interface between the die-bonding material and the support  
11 member.

1 13. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member, and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with die-bonding material  
6 comprising a filmy die-bonding material containing an organic  
7 matter; said filmy die-bonding material having a peel strength of  
8 0.5 kgf/5 × 5 mm chip or above at the stage where the  
9 semiconductor chip has been bonded to the support member.

1 14. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a

3 support member, and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter; said filmy die-bonding  
7 material i) having a planar dimension not larger than the planar  
8 dimension of the semiconductor chip, and ii) not protruding  
9 outward from the region of the semiconductor chip at the stage  
10 where the semiconductor chip has been bonded to the support  
11 member.

1 15. A process for fabricating a semiconductor device,  
2 comprising the steps of attaching a semiconductor chip to a  
3 support member, and encapsulating the semiconductor chip with a  
4 resin;

5 said attaching being carried out with a filmy die-bonding  
6 material containing an organic matter;

7 the process further comprising the steps of  
8 mounting said semiconductor chip on said filmy die-bonding  
9 material; and

10 attaching said semiconductor chip to said filmy die-bonding  
11 material under conditions of a temperature of 150°C to 250°C,  
12 bonding time of 0.1 (inclusive) second to 2 seconds, and a  
13 pressure of 0.1 to 4 gf/mm<sup>2</sup>.

1 16. A process for fabricating a semiconductor device,  
2 according to any one of claims 8 to 13 and 14, further comprising

005040" 42E1560

3 the steps of  
4 mounting said semiconductor chip on said filmy die-bonding  
5 material; and  
6 attaching said semiconductor chip to said filmy die-bonding  
7 material under conditions of a temperature of 150°C to 250°C,  
8 bonding time of 0.1 (inclusive) second to 2 seconds, and a  
9 pressure of 0.1 to 4 gf/mm<sup>2</sup>.

add  
a2

005040" 242E4560